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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/613,375 | 07/03/2003 | Elan Yogeswaren | PAT027US | 7193 |
| 32656 | 7590 | 03/11/2005 | EXAMINER | |
| W-H ENERGY SERVICES, INC. 10370 RICHMOND AVENUE SUITE 990 HOUSTON, TX 77042 | | | BUDD, MARK OSBORNE | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2834 | |

DATE MAILED: 03/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/613,375

Applicant(s)

YOGESWAREN, ELAN

Examiner

Mark Budd

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 20-25 is/are rejected.
- 7) ☒ Claim(s) 5-19 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9-27-04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Birchak.

Birchak (e.g. fig. 0) teaches an electrodes piezoelement #106, 108, 110 and a composite backing layer #112, 114, 116 which is made of a tungsten loaded rubber (i.e. tungsten particals in a matrix of rubber).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birchak in view of Miller.

As note above, Birchak teaches the basic acoustic transducer structure. Birchak does not teach using two different partical sizes of tungsten powder or the specific partical sizes. However, Miller (note fig. 2 and table I) clearly teaches using multiple partical sizes of tungsten in an elastomer (silicon etc) to change the acoustic impedance of the composite material to any desired value. Selection of a specific impedance, either for matching or attenuating is known to increase the efficiency of a piezoelectric acoustic transducer. Thus, for at least this reason it would have been

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obvious to one of ordinary skill in the art to adjust the tungsten content of Birchak (concentration and/or particle size) as taught by Miller.

Claims 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birchak in view of the prior art. Birchak, as previously stated, teaches the basic piezoelectric acoustic transducer with a tungsten loaded elastomeric backing layer. Birchak does not teach the use of a composite piezoelectric material, impedance matching layers, metal housing or the downhole measurement tool structure. However, these details are all known per se in the prior art-see e.g. applicants specification pages 2-4. (also, official notice is taken). The substitution of Birchak's specific piezoelectric transducer into other known systems that utilize similar piezoelectric transducer elements would have been obvious to one of ordinary skill in the art; as it amounts to the substitution of equivalent means, or selection from among known, suitable transducer elements. Selection would be based on factors such as cost, availability of materials and the amount of attenuation desired.

Claims 25 and 26 are allowed.

Claims 5-19 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Further cited of interest are tone (uses ferrite rubber backing layer), Kishi (composite piezo materials), Hanafy (backing materials) and Sato (impedance matching materials).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark O. Budd whose telephone number is (571)272-2019. The examiner can normally be reached on Monday-Thursday from 6am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor R. Ramirez, can be reached on ***. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Budd/ds

03/01/05

MARK O. BUDD
PRIMARY EXAMINER
ART UNIT 2834